

We claim:

1. An isolated inflammatory bowel disease associated I-2 polypeptide, comprising substantially the same amino acid sequence as SEQ ID NO: 2.

5 2. The isolated I-2 polypeptide of claim 1, comprising the amino acid sequence SEQ ID NO: 2.

3. An isolated immunoreactive fragment of an I-2 polypeptide, comprising substantially the same amino acid sequence as a portion of an I-2 polypeptide (SEQ ID NO: 2).

10 4. The isolated immunoreactive fragment of claim 3, comprising at least ten contiguous amino acids of SEQ ID NO: 2.

5. Substantially purified antibody material that selectively binds an I-2 polypeptide having SEQ ID NO: 2.

15 6. The substantially purified antibody material of claim 5, which is monoclonal antibody material.

7. An isolated nucleic acid molecule, comprising a nucleic acid sequence encoding substantially the same amino acid sequence as SEQ ID NO: 2.

20 8. The isolated nucleic acid molecule of claim 7, comprising the nucleic acid sequence SEQ ID NO: 1.

9. A method of diagnosing inflammatory bowel disease (IBD) in a subject, comprising:

- (a) obtaining a sample from said subject;
- (b) contacting said sample with an I-2 polypeptide, or immunoreactive fragment thereof, under conditions suitable to form a complex of said I-2 polypeptide, or said immunoreactive fragment thereof, and antibody to said I-2 polypeptide; and
- 10 (c) detecting the presence or absence of said complex,

wherein the presence of said complex indicates that said subject has IBD.

10. The method of claim 9, wherein the presence  
15 or absence of said complex is detected with a detectable secondary antibody that has specificity for a class determining portion of said antibody to said I-2 polypeptide.

11. The method of claim 9, wherein said IBD is  
20 Crohn's disease.

12. The method of claim 9, wherein said I-2 polypeptide comprises the sequence SEQ ID NO: 2.

13. A method of inducing tolerance in a patient with IBD, comprising administering an effective dose of I-2  
25 polypeptide, or tolerogenic fragment thereof, to said patient with IBD.

14. The method of claim 13, wherein said IBD is Crohn's disease.

15. The method of claim 13, wherein said I-2 polypeptide comprises the sequence SEQ ID NO: 2.

5 16. A composition comprising an I-2 polypeptide having substantially the same amino acid sequence as SEQ ID NO: 2, or tolerogenic fragment thereof, combined with a tolerogizing molecule.

10 17. The composition of claim 16, wherein said I-2 polypeptide has the amino acid sequence SEQ ID NO: 2.

18. The composition of claim 16, which comprises a tolerogenic fragment having at least ten contiguous amino acids of SEQ ID NO: 2.

19. A method of identifying an agent useful in treating inflammatory bowel disease (IBD), comprising:

- (a) obtaining a specimen of an enteric bacteria from a patient with IBD;
- 5 (b) isolating from said specimen a microbial species that comprises a nucleic acid molecule encoding an I-2 polypeptide;
- (c) contacting said microbial species with an agent; and
- 10 (d) assaying for reduced growth or viability of said microbial species as compared to the growth or viability in the absence of said agent, wherein said reduced growth or viability of said microbial species indicates that said agent is an agent useful in
- 15 treating IBD.

20. The method of claim 19, wherein said IBD is Crohn's disease.

21. The method of claim 19, wherein said agent is  
20 an antibiotic.

22. A method of identifying an agent useful in treating inflammatory bowel disease (IBD), comprising:

- (a) administering I-2 polypeptide to a non-human animal, whereby one or symptoms of IBD are exhibited;
  - (b) administering an agent to said non-human animal; and
  - (c) assaying the level of said one or more symptoms characteristic of IBD,
- 10 wherein a reduction in the level of said one or more symptoms as compared to a control level indicates that said agent is an agent useful in treating IBD.

23. The method of claim 22, wherein said IBD is Crohn's disease.

15 24. The method of claim 22, wherein said I-2 polypeptide has the amino acid sequence SEQ ID NO: 2.

25. The method of claim 22, wherein said non-human animal is a mouse selected from the group consisting of a G $\alpha$ i2 -/- mouse; a TCR $\alpha$  -/- mouse and a IL-10 -/- mouse.